

Amendments to the Drawings:

Submitted herewith is a replacement sheet for Figs. 5(a)-(c) which more clearly illustrates the recited features of the present invention.

Replacement Sheet

REMARKS

By the above amendment, the specification has been amended to utilize terms of "portion", in view of the points raised by the Examiner, claim 6 has been canceled without prejudice or disclaimer of the subject matter thereof, with the features of claim 6 being incorporated into parent claim 1, which has been amended to incorporate features of dependent claim 2 therein, as well as to clarify features of the present invention. Additionally, the multiple dependent claims have been amended to be in proper multiple dependent form, with new claims being added corresponding to previously submitted multiple dependent claims. Additionally, it is noted that claim 9 stands withdrawn from consideration.

Furthermore, with respect to the drawing objection, submitted herewith is a replacement sheet for Figs. 5(a)-(c) which more clearly illustrates the recited features of the present invention as described at pages 24 - 26 of the specification, and, which will be discussed below.

With respect to the indication that the Information Disclosure Statement fails to comply with 37 CFR 1.98(a)(3) "because it does not include a concise explanation of the relevance" (emphasis added), applicants note that the Information Disclosure Statement indicates that a concise explanation of the relevance is satisfied by the discussion of the documents in the specification, referring, for example, to page 9 of the specification. It is submitted that the documents listed in the Information Disclosure Statement are referred to in the specification as patent document 1, patent document 2 and non-patent document 1, which documents are fully described at pages 5 - 9 of the specification. Thus, applicants submit that the Information Disclosure Statement and the documents cited should be considered.

As to the rejection of claims 1 - 8 under 35 USC 112, first paragraph, as set forth in paragraphs 6 and 7 at page 4 of the office action, the rejection of claims 1 - 8 under 35 USC 112, second paragraph, as set forth in paragraphs 8 and 9 at pages 4 and 5 of the office action, the rejection of claim 8 under 35 USC 112, second paragraph and the rejection of claim 5 under 35 USC 112, second paragraph as set forth at paragraphs 10 and 11 at page 5 of the office action, such rejections are traversed insofar as they are applicable to the present claims, as will be discussed below.

Turning to claim 1, as amended, this claim recites the feature of a plasma processing apparatus for processing the substrate with plasma, as illustrated in Fig. 1 of the drawings, for example, by applying a high-frequency via the high-frequency source 18 to a reaction chamber 10 so as to generate plasma therein, and applying a second high-frequency via the high-frequency source 19 to a substrate holder 14 on which the substrate in the form of a wafer 4 is placed so as to control the ion energy to the substrate. In accordance with the present invention as illustrated in Figs. 1, 2 and 5(a)-5(c), for example, a surface portion of an inner side wall 101 of the reaction chamber 10 that is exposed to the plasma is substantially covered with a dielectric in the form of insulating material 102, as more clearly illustrated in Figs. 5(a) - (c), and an electrically conductive portion 21 (21a) as shown in Fig. 1, is disposed so as to be exposed to the plasma at a portion of the surface portion of the inner side wall of the reaction chamber which is at least partially covered with the dielectric and is electrically coupled to the inner side wall of the reaction chamber or earth so as to form a DC earth. That is, as described at page 15, lines 8 and 9 of the specification "a conductive member 21a electrically connected to the reaction chamber 10 and functioning as a DC earth" or as described at page 19, lines 12 - 18

"conductive member 21 is disposed so that the conductive material thereof comes into direct contact with plasma so as to enable direct current to flow therein from the plasma, and the conductive member is either connected to the earth reaction chamber container 10 made of conductive metal or earth through a wire connection so as to allow the incoming direct current to flow to the earth". Furthermore, claim 1 has been amended to incorporate part of the features of dependent claim 2 therein, that the electrically conductive portion has an area corresponding to less than 10% of the inner side wall area of the reaction chamber, as described at pages 23 and 24 of the specification. Additionally, claim 1 has been amended to incorporate features of dependent claim 6, which has been canceled, therein that a magnetic field generation means, as represented by coil 15 in Fig. 1, is disposed outside of the reaction chamber so as to apply magnetic field to the plasma, and that the DC earth is disposed at a position crossing a magnetic line of force that is closer to the substrate holder than a magnetic line of force that crosses either the inner side wall of the reaction chamber having the dielectric thereon or a surface of an earth member disposed on the inner side wall of the reaction chamber, as described in the paragraph bridging pages 10 and 11 of the specification for example. As noted above, the various features are now more clearly illustrated in the replacement sheet of drawings for Figs. 5(a) - 5(c), and applicants submit that claim 1 and the dependent claims, as amended, should be considered to be in compliance with 35 USC 112, and the drawing objections should be overcome. Applicants submit that all claims patentably distinguish over the cited art as will become clear from the following discussion.

As to the rejection of claims 1, 7 and 8 under 35 USC 102(b) as being anticipated by Kadomura; Shingo et al (US 6,391,437 B1); the rejection of claims 2,

3 and 5 under 35 USC 103(a) as being unpatentable over Kadomura; Shingo et al (US 6,391,437 B1); and the rejection of claim 6 under 35 USC 103(a) as being unpatentable over Kadomura; Shingo et al (US 6,391,437 B1) in view of Kazumi; Hideyui et al (US 6,388,624 B1); and the rejection of claim 4 under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Kadomura; Shingo et al (US 6,391,437 B1); such rejections are traversed insofar as they are applicable to the present claims and reconsideration and withdrawal of the rejections are respectfully requested.

As to the requirements under 35 USC 102, reference is made to the decision of In re Robertson, 49 USPQ 2d 1949 (Fed. Cir. 1999), wherein the court pointed out that anticipation under 35 U.S.C. §102 requires that each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. As noted by the court, if the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if the element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Moreover, the court pointed out that inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.

As to the requirements to support a rejection under 35 USC 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under '103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill

in the art would lead that individual to combine the relevant teachings of the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

In applying Kodamura et al to the claimed invention, the Examiner refers to Figs. 16 and 20A thereof. However, irrespective of the contentions by the Examiner, assuming arguendo, that the inner side wall 18 of a reaction chamber which is exposed to the plasma is substantially covered with a dielectric in the form of a ceramics layer 113, which ceramics layer would then be exposed to the plasma, applicants submit that Kadomura et al does not disclose that the ceramics layer 113 thereof is an electrically conductive portion disposed so as to be exposed to the plasma at a portion of the surface portion of the inner side wall of the reaction chamber which is at least partially covered with the dielectric and is electrically coupled to the inner side wall of the reaction chamber or earth so as to form a DC earth. Contrary to the position set forth by the Examiner, there is no disclosure or teaching of this recited feature of claim 1 in Kadomura et al. Furthermore, it is apparent that assuming arguendo, that the ceramics layer 113 as shown in Fig. 20A of Kadomura et al is an electrically conductive portion it is apparent that the ceramic layer 113 does not have an area corresponding to less than 10% of the inner side wall area of the reaction chamber. Applicants also submit that assuming arguendo, that the matrix 112 of Kadomura et al is an electrically conductive portion, as clearly

disclosed in Kadomura et al, such matrix 112 is covered by the ceramics layer 113 which is not an electrically conductive portion and does not have an area corresponding to less than 10% of the inner side wall of the reaction chamber. Furthermore, irrespective of the contentions by the Examiner, Kadomura et al does not disclose in the sense of 35 USC 102 or teach in the sense of 35 USC 103 that the DC earth, which is formed by the electrically conductive portion, is disposed at a position cross a magnetic line of force so that it is closer to the substrate holder than a magnetic line of force that crosses the inner side wall of the reaction chamber having a dielectric thereon or a surface of an earth member disposed on the inner side wall of the reaction chamber. Accordingly, applicants submit that claim 1, as amended and the dependent claims patentably distinguish over Kadomura et al in the sense of 35 USC 102 and 35 USC 103.

As to the combination of Kadomura et al with Kazumi et al, irrespective of the contentions by the Examiner, Kazumi et al also fails to disclose that a surface portion of an inner side wall of the reaction chamber that is exposed to the plasma is substantially covered with a dielectric, and an electrically conductive portion is disposed so as to be exposed to the plasma at a portion of the surface portion of the inner side wall of the reaction chamber which is at least partially covered with the dielectric and is electrically coupled to the inner side wall of the reaction chamber or earth so as to form a DC earth. Furthermore, it is apparent that Kazumi et al also fails to disclose or teach the other recited features of claim 1 and the dependent claims. Accordingly, applicants submit that claim 1 and the dependent claims patentably distinguish over Kazumi et al in the sense of 35 USC 103 and claim 1 and the dependent claims patentably distinguish over the combination of Kadomura et al

and Kazumi et al in the sense of 35 USC 103. Thus, all claims should be considered allowable thereover.

In view of the above amendments and remarks and the submission of the replacement sheet of drawings, applicants submit that the objection to the drawings should now be overcome, all claims should be considered to be in compliance with 35 USC 112, and all claims should be considered to patentably distinguish over the cited art. Accordingly, issuance of an action of favorable nature is courteously solicited.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 648.43518X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

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